



Self-Initiated Professional Development (SI-PD) Elements for Malaysian Vocational Colleges' TVET Teachers Using Fuzzy Delphi Method (FDM)

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DOI: <https://doi.org/10.30880/jtet.2022.14.01.009>

Received 16 December 2021; Accepted 7 June 2022; Available online 30 June 2022

Abstract: Self-Initiated Professional Development (SI-PD) has gained much attention lately due to increasing concern on the effectiveness of teachers' professional development practice. It is also one of Ministry of Education (MOE) agenda in Malaysia Education Blueprint (MEB) 2013-2025 to transform Continuous Professional Development (CPD) by increasing Self-Initiated Professional Development (SI-PD) from 16 percent to 60 percent and reducing Ministry-led professional development by the year of 2025. Specifically, the aim of this study was to explore the elements required in Self-Initiated Professional Development (SI-PD) framework for TVET teachers in vocational colleges according to experts' consensus. Fuzzy Delphi Method (FDM) was used as a tool in this study to explore the elements and data presented here were a part of a larger study which explored SI-PD among TVET teachers in Vocational Colleges. Nineteen experts were involved consisted of MOE officers, lecturers from universities and teacher training institutions who have at least five years of experience in teachers' professional development and TVET. Based on the data analysis, the defuzzification values for all elements exceeded the minimum value 33.6 and therefore, the findings conclusively suggested that the experts have consensually agreed that there are ten elements required in Self-Initiated Professional Development (SI-PD). The ranking of the elements based on experts' consensus was listed as follows, (1) Industrial attachment opportunity, (2) Attitude, (3) Understanding, (4) Collaborative environment, (5) School administrators' role, (6) Strategy, (7) Readiness, (8) Autonomy, (9) Reward and (10) Professional development system. The findings were used to design Self-Initiated Professional Development (SI-PD) framework for TVET teachers in vocational colleges. This study also promotes the suitability of Fuzzy Delphi Method as a current research tool in the field of research on professional development. The proposed SI-PD elements can underpin TVET teachers' professional learning and support the cultivation of Self-Directed Learning (SDL) which then enable changes in their teaching and learning practice to be more meaningful and effective.

Keywords: Self-Initiated, Professional Development, Fuzzy Delphi Method, TVET

1. Introduction

Human capital development plays a significant role in this increasingly competitive world and to fulfill its development, Malaysia requires human capital who are equipped with relevant knowledge, talents and skills. In 2019, Shared Prosperity Vision (SPV) 2030 was announced and the Twelfth Malaysia Plan (12MP) further manifest the implementation of the SPV 2030 (EPU, 2019). TVET enabler is being developed to increase the number of skilled workers to satisfy the market demands. Therefore, in Budget 2020, government has allocated large amount to boost the quality of TVET in the country to realize the Malaysia Education Blueprint (MEB) 2013-2025.

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TVET in Malaysia has undergone a major transformation which can be seen through the upgrading of vocational schools to vocational colleges with the aimed to uplift the standard of TVET to be at par with mainstream education. TVET often regard as second-class education but, TVET graduates are industrial relevant and marketable because their training is totally skill-based and directly related to the jobs in industry (Ismail et al., 2021; OECD, 2020; Ab Rahim, 2017). At the same time, TVET teachers in vocational colleges are challenged to adapt with the transformation which required them to maintain teaching and learning quality because the key factor to improve the quality of TVET graduates are strongly rely on the competencies of TVET teachers. Engaging in TVET teachers with meaningful professional development activities will keep them updated with the current knowledge and skills because they need to ensure the students, they produce are relevant to the current market (Nor Syuhada, 2015; Mimi Mohaffyza & Che Munira, 2012). TVET is different with general education in terms of nature of knowledge, information, and experience, also how learning content is determined and describes, therefore, their professional development should enable better links between theory and practice since majority courses offered are practical-laden courses (Muhd Khaizer et al., 2020; Kanwar et al., 2019; Ramli, 2018).

Ministry of Education (MOE) in MEB 2013-2025 is committed to improve the quality of teachers by introducing *Pelan Pembangunan Profesionalisme Berterusan* (PPPB) or known as Continuous Professional Development (CPD) masterplan policy in 2012 (Faizulizami, 2018). This policy was established to overcome the disappointment of the previous professional development strategies that have been used by MOE which were not fit in the current educational reform context. Figure 1 shows the desired CPD practice by MOE in MEB 2013-2025.



Fig. 1 - Desired Continuous Professional Development (CPD) Practice, MEB 2013-2025

Figure 1 illustrates the desired CPD transformation which to increase Self-Initiated Professional Development (SI-PD) from 16 percent to 60 percent and reducing ministry-led professional development by the year of 2025. SI-PD inculcates self-directed learning (SDL) which driven from self-planning, self-monitoring, self-evaluation (Faizulizami, 2018). SDL is one of the 21st century skills needed to succeed in the careers during the information age besides the idea was made after observing the previous strategies and approaches taken by MOE in teachers' professional development (MOE, 2013; P21, 2007). However, there were several issues and challenges faced by TVET teachers in vocational colleges in implementing SI-PD and these issues and challenges became the gap of this study.

(a) Lack of Awareness and Knowledge in SI-PD

Before the introduction of the current educational reform, teachers attended professional development activities which were planned and fully funded by the Ministry. According to Faizulizami (2018), teachers appeared to be irritated by the fact that they need to plan their own professional development because they still believe that MOE was responsible to manage their professional development activities. She added, SI-PD is not seen as an empowerment to teachers' professional learning but is seen as a burden which resulted in teachers' low motivation and dissatisfaction in their work. SI-PD is closely related to teachers' own learning experience, but teachers find it hard to be true supporters about it because not many of them have experience in SDL (Nurfardilla, 2016). Problem of spoon feeding the factors with the interest in the self-directed professional development stems out (Noorriati, Shireen, & Rahmah, 2016). Johar (2016) also highlighted in his study on TVET teachers' professional development in vocational colleges, TVET teachers do not clearly understand the definition and concept of professional development which resulting poor quality in their level of self-awareness about job, commitments, and responsibility as an educator. According to Jailani *et al.* (2017), TVET teachers' attitude who were reluctant to be more innovative, creative, and resourceful also became one of the challenges faced by the TVET Teacher Education program which later will affect the quality and delivery of TVET.

(b) Lack of Self-Motivation

Self-motivated is a critical attribute for professional development that adopted SDL basis as it can affect teachers' work values and job satisfaction (Chang & Lin, 2017). However, in current implementation of SI-PD, there was no rewards system been offered to teachers as motivation. Zuhaili and Ramlee (2017) study on TVET teachers in vocational colleges in the aspect of salary and remuneration found that TVET teachers' job satisfaction decreased when the rewards were not matching to their efforts. They also added that TVET teachers' workloads were increased since the upgrading of vocational schools to vocational colleges. According to Lopes and Cunha (2017), it is difficult to find individual who remains committed to their professional development over a lengthy period unless there is something that could motivate them. TVET teachers were lack of desire to initiate their professional learning as they were used to training that already planned and decided for them by MOE. Besides that, they also questioned on the control or freedom towards their professional development because there was still interference by the school administrators who have their rule of teachers' actions. They felt the autonomy was not fully given to them and as result, they became demotivated to implement SI-PD.

(c) Limited Support and Resources

Most TVET teachers highlighted the main challenge to implement SI-PD was time constraints. They stressed on that their working hours were not like mainstream schoolteachers, but they were working from 8 a.m. to 5 p.m. and they cannot be expected to squeeze their professional development around of their other duties. Remarkably, they taught on average 18 to 28 hours per week and coupled with administrative work, their drive to participate in professional development activities was unwilling or reluctant. Faizulizami (2018) agreed that teachers do not have the same amount of time as the policymakers to integrate the proposed change into their philosophy and work. Simegn (2014) pointed out that lack of resources and lack of encouragement from school management hindered teachers from exercising SI-PD. Supportive working environment from school administrators will create professional learning climate (Picard & Kutsyuruba, 2017; Su, Feng, & Hsu, 2017). School administrators do not aware or understand of SI-PD but still voice an expectation in their professional development even though school administrators do not provide appropriate support and resources. According to Johar (2016), the school administrators of vocational colleges did not involve TVET teachers during the planning and decision-making process of their professional development. He added, school administrators used one-size fits all approach without measuring readiness level and the ability of TVET teachers.

(d) Lack of Abilities or Skills in SI-PD

Novice TVET teachers felt uncomfortable, not ready to conduct SI-PD and would prefer to be assigned in more formal professional development activities. In Mohd Saiffuddeen and Dayana Farzeeha (2016) study on novice TVET teachers in vocational colleges, found that novice TVET teachers were facing professional development issues in terms of teaching and learning in vocational colleges, assessment and curriculum, classroom management and interpersonal relationships. They also found that the Program Pembangunan Guru Baru (PPGB) or New Teacher Development Program was not really catered their needs because it focused on the teachers' professionalism in general. Sariyildiz (2017) revealed that there is a difference in terms of readiness level when compared with novice and experienced teachers to carry out SI-PD. Most teachers lack prior experience with this form of learning (Noorriati, Shireen, & Rahmah, 2016). Faizulizami (2018) in her study mentioned that policymakers view the implementation of SI-PD as a window of opportunity for teachers to begin taking control of their individual professional development needs, a sense of empowerment which is rarely present in highly centralized systems.

(e) Lack of Guidelines for Self-Initiated Professional Development (SI-PD)

TVET teachers also reported there was no proper guidelines been provided to them in implementing SI-PD. Teachers' professional development is complex and it is helpful to have a guideline that can provide the information for the teachers need to know (Veloo *et al.*, 2015). Louws *et al.*, (2017) mentioned even teachers do set their own learning goals and initiate their own professional development, however they still need some guidance in the process. Teachers claimed that the dissemination of CPD masterplan policy was less effective because there was no brief explanation on the policy which resulting, they have their own interpretation. The unclear articulation of how teachers should fulfill these needs have further contributed to the disagreement between policy intention and implementation of CPD masterplan (Faizulizami, 2018). Besides that, the current CPD masterplan was too general and there was a need to provide some distinct characteristics to differentiate between general education teachers and TVET teachers in implementing SI-PD.

Therefore, these issues and challenges have hindered TVET teachers in implementing SI-PD effectively. Self-motivation is a critical attribute for professional development based on SDL but in current implementation of SI-PD, there is no reward system available for teachers as motivation. A study by Zuhaili and Ramlee (2017) on TVET teachers in vocational colleges in the aspect of salary and remuneration found that TVET teachers' job satisfaction decreased when the rewards did not match with their efforts. They also added that there has been an increase in TVET

teachers' workload had been since the upgrading of vocational schools to vocational colleges. SI-PD is closely related to teachers' own learning experience, but teachers find it hard to be true supporters about it because not many of them have experience in SDL (Nurfardilla, 2016).

Based on the gap in literature, thus the researcher seeks to explore the elements required by TVET teachers in implementing SI-PD effectively. TVET teachers' professional development are different from general education teachers because they have to be dual professional since they need to be competent in subject matter and vocational specialist, as well as an expert in teaching and guiding students to the requirement of industries (Ramli, 2018). In order to produce quality TVET teachers, the professional development itself has to be a long-term rather than just a quick solution to solve certain issues.

This research explored the SI-PD elements which are required for effective implementation of SI-PD among TVET teachers in vocational colleges because as referred to TVET strategy canvas in Economic Planning Unit (2019), the TVET instructors' competencies were considered low. The SI-PD elements can reduce the disconnection of TVET graduates' skills possession and what is required in the workplace. There is a need to explore the elements for SI-PD framework which could contribute to TVET teachers' professionalism and strengthen their teaching practice (Junita *et al.*, 2019). The elements obtained were important to be used as guidance and reference for policymakers in general and TVET teachers in developing professional development policy for TVET teachers in future.

Through the literature review, researcher has put forward Theory of Andragogy by Knowles *et al.* (2011) as the basis of this research. Theory of Andragogy (Knowles *et al.*, 2011) recognized that there are differences in the ways that adults learn as opposed to children. There are six assumptions of andragogy, namely, (i) Learner's need to know; (ii) Learner's self-concept; (iii) The role of learner's experience; (iv) Learner's readiness to learn; (v) Learner's orientation to learning and (vi) Learner's motivation to learn (Knowles *et al.*, 2011). In this research, Theory of Andragogy has been used as guidelines during the early stage of this research which was on the exploration of the elements for SI-PD framework for TVET teachers in vocational colleges.

2. Self-Initiated Professional Development (SI-PD)

The terms self-initiated, self-directed, self-led and self-regulated are interchangeable and have been defined in the literature from some point of view. Self-Initiated Professional Development (SI-PD) is a professional development that arises from teacher's own initiative which to develop their intellect, experience as well as attitude and internally motivated (Mushayikwa, 2013). In other words, SI-PD provided teachers with autonomy and empowering experiences as they made professional judgements regarding the time, context and content of their professional learning experiences (Weir, 2018). The following descriptions for SI-PD; can be planned, reviewed, approved, supported by school or it can be carried out independently by teachers. The benefits of SI-PD are depicted in the Table 1 below.

Table 1 - Benefits of Self-Initiated Professional Development (SI-PD)

Benefits of SI-PD	Explanations
Encourage collaborative learning experience	Effective and meaningful professional development is when it is related to their job. SI-PD encourages teachers to work collaboratively with their colleagues such as sharing their knowledge, experiences and strategies. This active engagement not only build professional knowledge but built healthy and beneficial relationship.
Fulfill individual needs	SI-PD is opened for teachers to acquire the knowledge and skills for their professional development at their own pace. This can boost their self-efficacy which later they become more confident in teaching and have higher self-esteem (Mushayikwa, 2013).
Opens to all learning possibilities	MOE in the CPD masterplan has listed out 13 professional development activities such as mentoring, peer coaching, discussions and benchmarking that teacher could engage. SI-PD allows teachers to choose any professional development activities according to their preferences, beliefs, and needs (Sariyildiz, 2017). The emergence of technology provides teachers with flexible and versatile professional development that they can engage at anywhere and anytime.
Reduce mismatch and costly professional development	The financial constraints led to the need to find new channel of transmitting knowledge (Tripon, 2019). TVET teachers' professional development usually requires large provision, and it is challenging to cater everyone's need. It also may reduce the mismatch between the needed professional development and the practice professional development (Mushayikwa, 2013).

SI-PD is an application of Self-Directed Learning (SDL) which is learner-driven learning that determined by the needs, interests and learning conditions of the individual (Tri, van Hong & Vo, 2017). It can be considered as new approach of professional development in Malaysia and most of the teachers still unfamiliar with it, thus they still need supports because sometimes teachers do not recognize what they do not know (Riddle, 2018; Louws *et al.*, 2017; Noorriati *et al.*, 2016). They are also not familiar with professional development opportunities available within their working environment such as peer classroom observation, coaching, discussions, networking, as well as classroom-based action research (Komba & Mwakabenga, 2019). Therefore, there are several elements that need attention by the MOE to successfully improve teachers' fullest potential (Kan'an & Osman, 2015).

3. Methodology

This study used Fuzzy Delphi Method (FDM) to explore the elements required for SI-PD framework for TVET teachers in vocational colleges. FDM is not a new technique instead it is a measurement instrument rebranding from existing Delphi Technique (Mohd Ridhuan *et al.*, 2014). The Delphi technique takes into account the views of a group of experts and their application very widespread in various fields especially in education. The uniqueness of the agreement is achieved without any bias and pressure from the dominant parties. While FDM is a combination of Fuzzy Set Theory and Delphi Technique. According to Mohd Ridhuan *et al.* (2014), FDM is more effective because it able to solve the uncertainty for a study.

Classic Delphi method requires more time to gather experts' opinions because it must be repeated multiple times. This can create boredom and risk of high data loss due to too long study period (Mohd Ridhuan *et al.*, 2014). Chang, Hsu and Chang (2011) argue that FDM can reduce the length of the Delphi rounds by just one round and increase questionnaire recovery rate. As compared to the classic Delphi method, FDM considers the fuzziness during the survey which reflects experts' true opinions in their response. Therefore, as referred to Ellis and Levy (2010), FDM is relevant for framework development because experts' involvement with critical review of literature will help to produce a solid outcome for framework development.

FDM contains two-step process which in the first step, researcher interviewed experts to explore the elements of SI-PD which then used to develop FDM questionnaire instrument. The interview sessions began with a brief explanation on Self-Initiated Professional Development (SI-PD) concept and the issues faced by TVET teachers during the implementation of SI-PD. Researcher developed a FDM questionnaire using seven-point linguistic scale because it obtained more accurate data and then distributed in the second step (Mohd Ridhuan *et al.*, 2014).

They were identified through the purposive sampling and not randomly selected (Ramlan & Ghazali, 2018). For this study, a total number of 19 experts in teachers' professional development or TVET were involved in FDM to obtain experts' consensus as suggested by Hsu and Sandford (2007), the number of experts involved should be between 10 until 50 experts. It also should not be too large as it might increase the complexity and having too many viewpoints (Habibi *et al.*, 2015; Okoli & Pawlowski, 2004). The most crucial criteria in selecting experts are based on the length of occupational background or deliberate practice. The panel of experts must have experiences in the related field at least five years consistently and involving experts with variety background will give different views and perspectives (Ramlan & Ghazali, 2018; Akbari & Yazdanmehr, 2014; Mohd Ridhuan *et al.*, 2014). The panel of experts of this study consisted of MOE officers, lecturers from universities and teachers training institution who have at least five years of experience in teachers' professional development and TVET.

The interview results have been transcribed and reported the findings in narrative way supported by interview excerpts and placed according to the themes. The thematic analysis was then implemented to achieve the themes most related to the research objective. It is a practical approach and effective to identify the patterns embedded in a collection of interview data (Percy *et al.*, 2015; Crowe *et al.*, 2015). Then, researcher carried out analysis according to FDM to obtain the consensus of the SI-PD elements. On the other hand, validity in qualitative research might have different terms than in quantitative research (Creswell & Poth, 2013). In this regard, the quality of the interview protocol is vital because it is subjected to the information obtained from the instrument. Two experts in teachers' professional development who have at least five years of experience in field were appointed to validate the interview protocol to ensure the suitability for semi-structured interview (Ramlan & Ghazali, 2018; Creswell & Clark, 2011).

4. Results and Data Analysis

Based on the result of thematic analysis, an initial questionnaire was developed that consisted of 10 elements of Self-Initiated Professional Development (SI-PD); Understanding, Rewards, School Administrators' Role, Professional Development System, Attitude, Readiness, Industrial Attachment Opportunity, Collaborative Environment, Autonomy and Strategy. Experts were asked to assess their level of agreement for each element according to the seven-point linguistic scale (1- Extremely disagree and 7- Extremely agree). They were also given the opportunity to make any suggestions for improvisation. This scale was selected because the analytical results are more accurate compared to the five-point linguistic scale (Ramlan & Ghazali, 2018; Mohd Ridhuan *et al.*, 2014) as shown in Table 2 below.

Table 2 - Seven-Point Linguistic Scale

Linguistic scale	Variable	Fuzzy scoring	Average
1	Extremely disagree	0.0/0.0/0.1	3.3
2	Strongly disagree	0.0/0.1/0.3	13.3
3	Somewhat disagree	0.1/0.3/0.5	30.0
4	Unsure	0.3/0.5/0.7	50.0
5	Somewhat agree	0.5/0.7/0.9	70.0
6	Strongly agree	0.7/0.9/1.0	86.7
7	Extremely agree	0.9/1.0/1.0	96.7

Triangulation of Fuzzy Number is a process of changing experts' agreement values from linguistic scale to fuzzy numbers. The seven-point linguistic scale has three different values, the average minimum value (n1), the most reasonable value (n2) and the maximum value (n3). For example, when the rating 6 turns into fuzzy, the number will be 0.7/0.9/1.0, which indicates the average minimum value (n1) of experts agree to the element is 0.7 (70%), the most reasonable value (n2) is 0.9 (90%) and the maximum value agreed by the expert is 1.0 (100%). This fuzzy score specifies the percentage of experts' consensus and the threshold value, d. The acceptance requirement of an element is that the consensus of all experts must exceed 75% and the threshold value $d \leq 0.2$. While the defuzzification process is to rank the elements and identify the importance of each element.

The questionnaire consisted of 10 elements developed from thematic analysis on the interview transcripts. After going through the triangulation of fuzzy number process, all 10 elements were accepted with an average percentage of experts' agreement from 85% to 97% and the threshold value, d is between 0.054 and 0.110. However, there were some rephrasing on the name of the elements were done as suggested by the experts, for example, the school administrator to school administrators' role, system to professional development system, environment to collaborative environment and industrial attachment to industrial attachment opportunity. Therefore, in Table 3 above showed the analysis results based on experts' consensus.

Table 3 - Analysis based on experts' consensus

Elements	Threshold value, <i>d</i>	Fuzzy Score, <i>A</i>	Experts' agreement	Ranking
Understanding	0.086	0.937	Accept	3
Reward	0.069	0.874	Accept	9
School Administrators' Role	0.075	0.921	Accept	5
Professional Development System	0.110	0.850	Accept	10
Attitude	0.068	0.953	Accept	2
Readiness	0.071	0.911	Accept	7
Collaborative environment	0.069	0.932	Accept	4
Industrial attachment opportunity	0.054	0.968	Accept	1
Autonomy	0.081	0.889	Accept	8
Strategy	0.063	0.916	Accept	6

5. Discussions

Fuzzy Delphi Method (FDM) was used in this study, to explore the SI-PD elements for Malaysian vocational colleges TVET teachers. FDM is a scientific statistical analysis method to obtain consensus from experts. The ambiguity during the analysis process can be eliminated with the fuzzy number application. The main key to successfully using FDM is selection of experts so that the feedback and information gathered on the elements are validated. The ranking of the elements based on experts' consensus was listed as follows, (1) Industrial attachment opportunity, (2) Attitude, (3) Understanding, (4) Collaborative environment, (5) School administrators' role, (6) Strategy, (7) Readiness, (8) Autonomy, (9) Reward and (10) Professional development system.

From the defuzzification score, the industrial attachment opportunity was at the first ranked among other SI-PD elements according to experts' consensus. It shows the experts strongly expressed the industrial attachment opportunity element was vital for effective implementation of SI-PD for TVET teachers in vocational colleges. Industrial attachment allows TVET teachers to keep up with the latest technical knowledge and skills in order to stay relevant to

industry and offers a platform to assimilate theory into practice. The finding of this study is also aligned with the Utomo (2018) and Matamande *et al.* (2013) who stated that authentic experience in the industry will boost credibility of TVET teachers and bringing the elements of realism in their teaching. The second element is the attitude of TVET teachers. Ultimately, teachers' attitude towards professional development influences the way they think, understand, feel and behave. If the teachers have positive attitude towards professional development, their teaching career will have the potential to be successful. This is in line with argument of Aktan *et al.* (2020) and Eslaminejad and Nakhac (2012) who stated that teachers with self-directed learner attitude usually have positive thought about their potential to succeed, to be independent, open-minded, and self-initiated. Aligned to Theory of Andragogy, adults always changing which they must learn to accept and embrace. This combination can create passionate attitude towards learning causes TVET teachers to embrace every new experience as an opportunity to learn.

The third element is TVET teachers' understanding on the concept of SI-PD. Adult learners are different with children since the desire to learn is influenced by their understanding of what they need to learn. Subsequently, teachers will find it challenging and unwilling to implement something which they do not understand. This finding was what been emphasized in Theory of Andragogy where adults most interested in learning which have immediate relevance to their job and life. Consistent to Ferreira and MacLean (2017) and Joo *et al.* (2013) who also agreed that providing the understanding will help them appreciate the value of the learning. Besides that, study of Dinger (2019) described understanding element can be a catalyst to unlock awareness that can transform individual's behavior. The fourth element is collaborative environment where it demands teachers to develop grown-up norms where differences, debates or disagreements are viewed as foundation of improvement. This point is also voiced by Govender (2015) who claimed that collaborative environment promotes a healthy and beneficial relationship between teachers because they are sharing responsibilities, providing feedback, and building trust. This finding also confirmed the Theory of Andragogy which the best resource for learning is the adults who has time to share, discuss and participate in peer-helping activities. However, teachers must learn to accept constructive criticism professionally.

The fifth element is school administrators' role because with the right leadership style, they can create strong and positive climate in implementing SI-PD. As school leaders, they can guide teachers to use their strengths to make an impact in professional development and improve their weaknesses. This finding confirms Louws *et al.* (2017) and Doby and Fischer (2011) study who found that school administrators' leadership style should involves mutual accountability, empowerment of employees and non-centralization. This study clearly shows that school administrators' role is a vital element in SI-PD because unsupportive or incompetent school administrators could impede in transforming their teachers' professional development (Lim *et al.*, 2014). This finding is also aligned with Lasater (2016) who highlighted that school administrators should provide opportunities for teachers' voices to be heard and allow them in decision making process. The self-concept in Theory of Andragogy have concluded that adults have authority over their life. Therefore, deep psychological development needs to be seen and treated by others as being capable of self-direction (Knowles *et al.*, 2011).

The sixth element is strategy for teachers to reach certain milestones in their professional development. Careful planning is needed to create perfect personal development strategy. Among the strategies of professional development identified were peer coaching, mentoring, study groups and team teaching (Hismanoglu, 2010). When the teachers designed their own strategy, it provides teachers with the opportunity to think regularly about their practice, dilemma they are facing and can adjust according to their own school context (Reiser, 2013).

Readiness towards SI-PD is identified as the seventh element. Readiness varies among teachers, and it is influenced by several factors. Readiness will be evident when the 'need to know' assumption and be able to do to cope effectively (Knowles *et al.*, 2011). This finding was aligned with Brandt (2020) and Hung (2015) who claimed that learners with high readiness able to learn independently and perform successfully in SDL compared to learners with low readiness level. Theory of Andragogy by Knowles *et al.* (2011) mentioned that as a person matures, the individual moved from dependency to self-directedness. But it was sometimes forgotten that professional development needs arise equally for experienced teachers too.

The eighth element is autonomy in professional development. Autonomy will allow TVET teachers to take control in facilitating their professional development. This is in line with Sehwat (2014) and Jossberger *et al.* (2010) study who stated that teachers' degrees of control been given to them will also increase their responsibility towards professional development.

The ninth element is reward for teachers in implementing SI-PD because fair and equitable rewards can increase their level of commitment and job satisfaction. This finding is consistent with the study performed by Ayele (2014) and Vnoučková (2016) who also agreed that reward element has a significant relationship with employees' behavior. In addition, according to Eshun and Duah (2011) study, employees want the extrinsic and intrinsic rewards are meant to be complementary and not replacing for one another. The last element is professional development system that should be flexible and be evaluated based on their true performance. This finding is also aligned with Rafiza *et al.* (2016) who proposed performance-based system for teachers' professional development can enhance teachers' competency, professionalism, skills, and knowledge based on Key Performance Indicator (KPI) which functions as a pushing factor to involve teachers' active participation in their professional development. Although Knowles *et al.* (2011) in Theory of

Andragogy believed the most persuasive motivators were internal rewards (self-esteem, self-actualization), they were externally motivated (appraisal, salaries, bonus) as well.

6. Conclusion

In conclusion, panel of experts reached the consensus that elements of Self-Initiated Professional Development (SI-PD) required for TVET teachers in vocational colleges are Understanding, Rewards, School Administrators' Role, Professional Development System, Attitude, Readiness, Industrial Attachment Opportunity, Collaborative Environment, Autonomy and Strategy. Each element plays a significant role and can be as a source of reference in enhancing the effectiveness of SI-PD among TVET teachers in vocational colleges. Therefore, the ten elements need to be considered by Malaysian educational stakeholders to ensure the success of SI-PD implementation among TVET teachers. Theoretically, this research has provided empirical evidence between SI-PD and Theory of Andragogy. By undergoing the process of exploring SI-PD elements, experts were able to give feedbacks and reasons why current professional development efforts have not achieved intended changes in teachers. Previously, it may be sufficient to direct teachers to follow guidelines but today, learning is about curiosity and self-directed in learning besides they are hesitant to be considered as child. This supports the concept of Andragogy theory, as it accommodates TVET teachers' learning styles and goals. Placing teachers as the centre to their professional development will develop the ability to learn from experience, integrate knowledge and think reflectively. Such principles can be found in SI-PD if the designed infused andragogy in mind. As limitation of this research, only panels of experts in teachers' professional development and TVET were involved based on purposive sampling method. The process of experts' selection quite time consuming to ensure the selected experts were able to provide the right view with the context of the research. Hence, the findings were highly dependent on the commitment and cooperation given by the experts. For future research, this research should be replicated with different sample for the purpose of continuing to establish a nomological network for Self-Initiated Professional Development (SI-PD) such as educators in other TVET institutions or can be extended to teachers other than TVET. The nature of SI-PD needs to be measured repeatedly to see its stability over time. Besides that, future research can be implemented using different variables from this research such as belief, motivation, and reflective practice to see the effect on the Self-Initiated Professional Development (SI-PD). It is possible that there is something fundamentally different about SI-PD that should be explored.

Acknowledgement

This paper was supported by Ministry of Education (MOE). I would like to thank my supervisors who provided insight and expertise that for comments that greatly improved this paper.

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